

UNITED STATES AIR FORCE

OCCUPATIONAL SURVEY REPORT

CARDIOPULMONARY LABORATORY

AFSC 4H0X1

AFPT 90-4H0-079

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JANUARY 1997

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AIR FORCE OCCUPATIONAL MEASUREMENT SQUADRON
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PREFACE

This report presents the results of an Air Force Occupational Survey of the Cardiopulmonary Laboratory career ladder, Air Force Specialty Code (AFSC) 4H0X1. Authority for conducting occupational surveys is contained in AFI 36-2623. Computer products used in this report are available for use by operations and training officials.

The survey instrument was developed by Captain Carol A. Owen (CAF), Inventory Development Specialist, with computer programming support furnished by Mrs. Jeanie C. Guesman and administrative support provided by Mr. Richard G. Ramos. Second Lieutenant Diedre N. Presley, Occupational Analyst, analyzed the data and wrote the final report. This report has been reviewed and approved by Lieutenant Colonel Roger W. Barnes, Chief, Airman Analysis Section, Occupational Analysis Flight, Air Force Occupational Measurement Squadron (AFOMS).

Copies of this report are distributed to Air Staff sections, major commands, and other interested training and management personnel. Additional copies are available upon request to AFOMS, Attention: Chief, Occupational Analysis Flight (OMY), 1550 5th Street East, Randolph AFB Texas 78150-4449 (DSN 487-6623).

RICHARD C. OURAND, JR., Lt Col, USAF
Commander
Air Force Occupational Measurement Squadron

JOSEPH S. TARTELL
Chief, Occupational Analysis Flight
Air Force Occupational Measurement Squadron

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SUMMARY OF RESULTS

1. Survey Coverage: The Cardiopulmonary Lab career ladder was surveyed to obtain current task and equipment data for use in evaluating current training programs. Survey results are based on responses from 309 respondents (79 percent of the total assigned personnel). The survey sample satisfactorily represents the overall career ladder population.
2. Specialty Jobs: Five jobs were identified in the sample: Respiratory Therapy, Noninvasive Cardiology, Pulmonary Diagnosis, Invasive Cardiology, and Cardiopulmonary Laboratory Management. Seventy-seven percent of career ladder incumbents work in the Respiratory Therapy and Noninvasive Therapy jobs.
3. Career Ladder Progression: Skill-level progression for members of this AFSC is typical of most career ladders. Personnel at the 3- and 5-skill levels perform many tasks in common and both groups spend the vast majority of their relative job time performing common respiratory therapy, pulmonary, or cardiovascular tasks. At the 7-skill level, although members still perform a substantial amount of routine day-to-day technical cardiopulmonary tasks, a shift toward supervisory functions is evident. Personnel at the 9-skill level and Chief Enlisted Managers (CEMs) spend their relative job time exclusively on managing cardiopulmonary lab programs and facilities.
4. AFMAN 36-2108 Specialty Description: The specialty description accurately depicts the nature of the respective jobs.
5. Training Analysis: A comprehensive review of the Specialty Training Standard (STS) found that most paragraphs were supported by the survey data. However, a few areas in the STS display tasks with less than the recommended percent members performing. These areas should be reviewed to determine any modifications required to improve the effectiveness or efficiency of training. The Plan of Instruction was not covered in this report due to recent changes being worked at the technical school.
6. Job Satisfaction Analysis: Job satisfaction for respondents in this study and members of similar AFSCs surveyed in 1995 were compared. Data show AFSC 4H0X1 personnel have somewhat higher satisfaction indicators than their counterparts in other medical AFSCs. Overall satisfaction has improved over the years. Members of most jobs find their work interesting and feel their talents and training are well used. Only Pulmonary Diagnosis personnel showed major problems related to their sense of accomplishment from their job.
7. Implications: Overall, survey data for the Cardiopulmonary Lab Career Ladder reflect a well functioning career ladder. The Cardiopulmonary Laboratory Career Ladder has seen only minor changes in career structure since the previous survey in 1990. The basic premise of performing respiratory therapy, cardiopulmonary, and cardiovascular activities has remained constant. Personnel in the Noninvasive Cardiology and Respiratory Therapy jobs make up the bulk of the career ladder. Members of the Cardiopulmonary Laboratory specialty appear to be

extremely satisfied with their jobs, with job satisfaction indicators generally higher than those in the 1990 survey. The most notable exception is the somewhat lower positive responses concerning reenlistment intentions by the current survey in the 49-96 months TAFMS group compared to those in 1990.

**OCCUPATIONAL SURVEY REPORT (OSR)
CARDIOPULMONARY LAB CAREER LADDER
(AFSC 4H0X1)**

INTRODUCTION

This is a report of an occupational survey of the Cardiopulmonary Laboratory (AFSC 4H0X1) career ladder completed by the Air Force Occupational Measurement Squadron (AFOMS). These data will be utilized to review the AFMAN 36-2108 *Specialty Description* and training documents. The last OSR was published in October 1990.

Background

As described in the AFMAN 36-2108 *Specialty Description*, dated 31 October 1993, personnel in this career ladder perform and manage cardiopulmonary laboratory functions and activities for noninvasive diagnostic cardiac procedures, invasive diagnostic and interventional cardiac procedures, pulmonary function testing, diagnostic and therapeutic bronchoscopies, and respiratory therapy.

Entry into the career ladder currently requires an Armed Services Vocational Aptitude Battery Electronic score of 43. The sequence of technical training for this AFSC begins with attending a 57-day Cardiopulmonary Laboratory Apprentice Training (Phase I) Course conducted at Sheppard AFB TX. This course curriculum includes training in basic theory and skills to assist cardiologists and pulmonary physicians in examination, evaluation, and management of cardiovascular and pulmonary dysfunctions. Upon completion of Phase I, members proceed to Cardiopulmonary Laboratory Apprentice Training (Phase II). This 30-week course is conducted at designated hospitals around the country. Here, they provide assistance to cardiologists and pulmonary physicians in examination, evaluation, diagnosis, and management of cardiovascular and pulmonary dysfunction by performing a broad spectrum of diagnostic procedures. Upon successful completion of Phase II training, they are awarded the 3-skill level. The 5-skill level is awarded upon promotion to Senior Airman.

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SURVEY METHODOLOGY

Inventory Development

The data collection instrument for this occupational survey was USAF Job Inventory (JI) Air Force Personnel Test (AFPT) 90-4H0-039, dated 8 May 1995. A tentative task list was prepared after reviewing pertinent career ladder publications and directives, pertinent tasks from the previous survey instrument, and data from the last OSR. The preliminary task list was refined and validated through personal interviews with 25 subject-matter experts at the technical training location and at the following operational bases:

| <u>BASE</u> | <u>UNIT VISITED</u> |
|-----------------|---------------------|
| Sheppard AFB TX | 381 TRS/CSC |
| Travis AFB CA | 60 MDOS/SGOML |
| Lackland AFB TX | 59 MDW/PSMP |
| Kirtland AFB NM | 377 MDOS/SGOMIC |
| Luke AFB AZ | 56 MDG/SGOMCD |
| Nellis AFB NV | 554 MDOS/SGOMC |

The resulting JI contains a comprehensive listing of 313 tasks grouped under 8 duty headings and a background section requesting such information as grade, duty title, organizational level, type of facility where employed, testing and calibration equipment used, and equipment maintained.

Survey Administration

From April through July 1996, Base Training Offices administered the inventory to 393 eligible AFSC 4H0X1 personnel. To qualify for the survey, personnel were required to hold a duty AFSC of 4H031, 4H051, 4H071, 4H091, or 4H000. Excluded from the survey were personnel in PCS, student, or hospital status, or with less than 6 weeks on the job. Job incumbents were selected from a computer-generated mailing list obtained from personnel data tapes maintained by the Air Force Personnel Center, Randolph AFB TX.

Each individual who completed the inventory first completed an identification and biographical information section and then checked each task performed in his or her current job. After checking all tasks performed, each member then rated each of these tasks on a 9-point scale, showing relative time spent on that task, as compared to all other tasks checked. The ratings ranged from 1 (very small amount time spent) through 5 (about average time spent) to 9 (very large amount time spent).

To determine relative time spent for each task checked by a respondent, all of the incumbent's ratings are assumed to account for 100 percent of his or her time spent on the job and are summed. Each task rating is then divided by the total task ratings and multiplied by 100 to provide a relative percentage of time spent for each task. This procedure provides a basis for comparing tasks in terms of both percent members performing and average percent time spent.

Survey Sample

Personnel were selected to participate in this survey so as to ensure an accurate representation across major commands (MAJCOM) and paygrade groups. All eligible AFSC 4H0X1 personnel were mailed survey booklets. Table 1 reflects the percentage distribution, by MAJCOM, of assigned AFSC 4H0X1 personnel as of April 1996. The 309 respondents in the final sample represent 74 percent of the total assigned personnel. Table 2 reflects the paygrade distribution for these AFSC 4H0X1 personnel. The survey sample is considered to be a satisfactory representation of the career ladder population.

Task Factor Administration

Job descriptions alone do not provide sufficient data for making decisions about career ladder documents or training programs. Task factor information is needed for a complete analysis of the career ladder. While most participants in the survey process completed a USAF JI, selected senior AFSC 4H0X1 personnel were also asked to complete booklets rendering judgments on task training emphasis (TE) or task difficulty (TD). The TE and TD booklets were processed separately from the JIs. The information gained from these task factor data is used in various analyses and is a valuable part of the training decision process.

Training Emphasis (TE). TE is a rating of the amount of emphasis that should be placed on tasks in entry-level training. The 21 senior AFSC NCOs who completed a TE booklet were asked to select tasks they felt required some sort of structured training for entry-level personnel and then indicate how much training emphasis these tasks should receive, from 1 (extremely low emphasis) to 9 (extremely high emphasis). Structured training is defined as training provided at resident technical schools, field training detachments, mobile training teams, formal on-the-job-training (OJT), or any other organized training method. The interrater reliability was excellent, indicating very strong agreement among the 32 raters as to which tasks required some form of structured training and which did not. The average TE rating was 3.44, with a standard deviation of 2.16. Any task with a TE rating of 5.60 or above is considered to have high TE.

TABLE 1
MAJCOM DISTRIBUTION OF AFSC 4H0X1 PERSONNEL

| <u>COMMAND</u> | <u>PERCENT OF ASSIGNED*</u> | <u>PERCENT OF SAMPLE</u> |
|----------------|---------------------------------|------------------------------|
| AETC | 38 | 30 |
| AMC | 24 | 29 |
| AFMC | 17 | 20 |
| ACC | 11 | 12 |
| USAFE | 4 | 4 |
| PACAF | 3 | 3 |
| USAFA | 2 | 2 |
| OTHER | 1 | ~ |

TOTAL ASSIGNED = 419*

TOTAL SURVEYED = 393**

TOTAL IN SURVEY SAMPLE = 309

PERCENT OF ASSIGNED IN SAMPLE = 74%

PERCENT OF SURVEYED IN SAMPLE = 79%

~ Less than 1 percent

* Assigned strength as of April 1996

** Excludes personnel in PCS, student, or hospital status, or less than 6 weeks on the job

TABLE 2
PAYGRADE DISTRIBUTION OF SURVEY SAMPLE

| <u>PAYGRADE</u> | <u>PERCENT OF ASSIGNED*</u> | <u>PERCENT OF SAMPLE</u> |
|-----------------|---------------------------------|------------------------------|
| E-1 to E-3 | 25 | 21 |
| E-4 | 31 | 32 |
| E-5 | 23 | 26 |
| E-6 | 12 | 13 |
| E-7 | 7 | 7 |
| E-8, E-9 | 2 | 1 |

* Assigned strength as of April 1996

Task Difficulty (TD). TD is an estimate of the amount of time needed to learn how to do each task satisfactorily. The 27 senior NCOs who completed TD booklets were asked to rate the difficulty of each task using a 9-point scale (extremely low to extremely high). Interrater reliability was acceptable, with high agreement. Ratings were standardized, so tasks have an average difficulty of 5.00 and a standard deviation of 1.00. Any task with a TD rating of 6.00 or above is considered to be difficult to learn.

When used in conjunction with the primary criterion of percent members performing, TE and TD ratings can provide insight into first-enlistment personnel training requirements. Such insights may suggest a need for lengthening or shortening portions of instruction supporting entry-level jobs.

SPECIALTY JOBS (Career Ladder Structure)

The occupational analysis process begins with an examination of the career ladder structure. The structure of jobs within the Cardiopulmonary Laboratory career ladder was examined on the basis of similarity of tasks performed and the relative percent of time spent ratings provided by job incumbents, independent of other specialty background factors.

The first step in the analysis process is to identify the structure of the career ladder in terms of the jobs performed by the respondents. Comprehensive Occupational Data Analysis Programs (CODAP) assist by creating an individual job description for each respondent based on the tasks performed and relative amount of time spent on the tasks. The CODAP automated job clustering program then compares all the individual job descriptions, locates the two descriptions with the most similar tasks and time spent ratings, and then combines them to form a composite job description. In successive stages, new members are added to the initial group or new groups are formed based on the similarity of tasks performed and time spent ratings.

The basic group used in the hierarchical clustering process is the Job. When two or more jobs have a substantial degree of similarity in tasks performed and time spent on tasks, they are grouped together and identified as a Cluster. The structure of the career ladder is then defined in terms of jobs and clusters of jobs. The resulting job structure information can be used to evaluate the accuracy of career ladder documents (i.e., AFMAN 36-2108 *Specialty Descriptions*, the Career Field Education and Training Plan, and Specialty Training Standards (STS)) and to gain a better understanding of current utilization patterns. The above terminology will be used in the discussion of the AFSC 4H0X1 career ladder structure.

Overview of Specialty Jobs

Structure analysis identified five jobs within the survey sample. Based on task similarity and relative time spent, the jobs performed by AFSC 4H0X1 personnel are illustrated in Figure 1. A listing of those jobs is provided below. The stage (ST) number shown beside each title is a reference to computer-printed information; the number of personnel in each stage (N) is also shown.

- I. RESPIRATORY THERAPY JOB (ST016, N=118)
- II. NONINVASIVE CARDIOLOGY JOB (ST013, N=121)
- III. PULMONARY DIAGNOSIS JOB (ST012, N=16)
- IV. INVASIVE CARDIOLOGY JOB (ST017, N=17)
- V. CARDIOPULMONARY LABORATORY MANAGEMENT JOB (ST015, N=25)

The respondents forming these jobs account for 96 percent of the survey sample. The remaining 4 percent are performing tasks or a series of tasks that did not group with any of the defined jobs. Job titles given by respondents representative of these personnel include: NCOIC Sleep Disorder, Medical Flight NCOIC, Polysomnography Technician, Special Projects NCO, Superintendent Neonatal ICU, and ABG Quality Monitor/Cardiology.

Group Descriptions

The following paragraphs contain brief descriptions of the jobs identified through the career ladder structure analysis. Table 3 presents the relative time spent on duties by members of these specialty jobs. Selected background data for these jobs are provided in Table 4. Representative tasks for all the jobs are contained in Appendix A.

I. RESPIRATORY THERAPY JOB (ST016). The 118 respondents in this job account for 38 percent of the survey sample. They were identified separately as having this job because they perform a number of tasks dealing specifically with respiratory therapy functions. Members with this job spend 51 percent of their duty time performing respiratory therapy functions (Table 3, Duty E), and 32 percent performing tasks common to respiratory therapy, pulmonary, or cardiovascular functions (Table 3, Duty A). They perform an average of 82 tasks and are distinguished by the time they spend performing the following tasks:

CARDIOPULMONARY LABORATORY SPECIALTY JOBS

(N = 309)

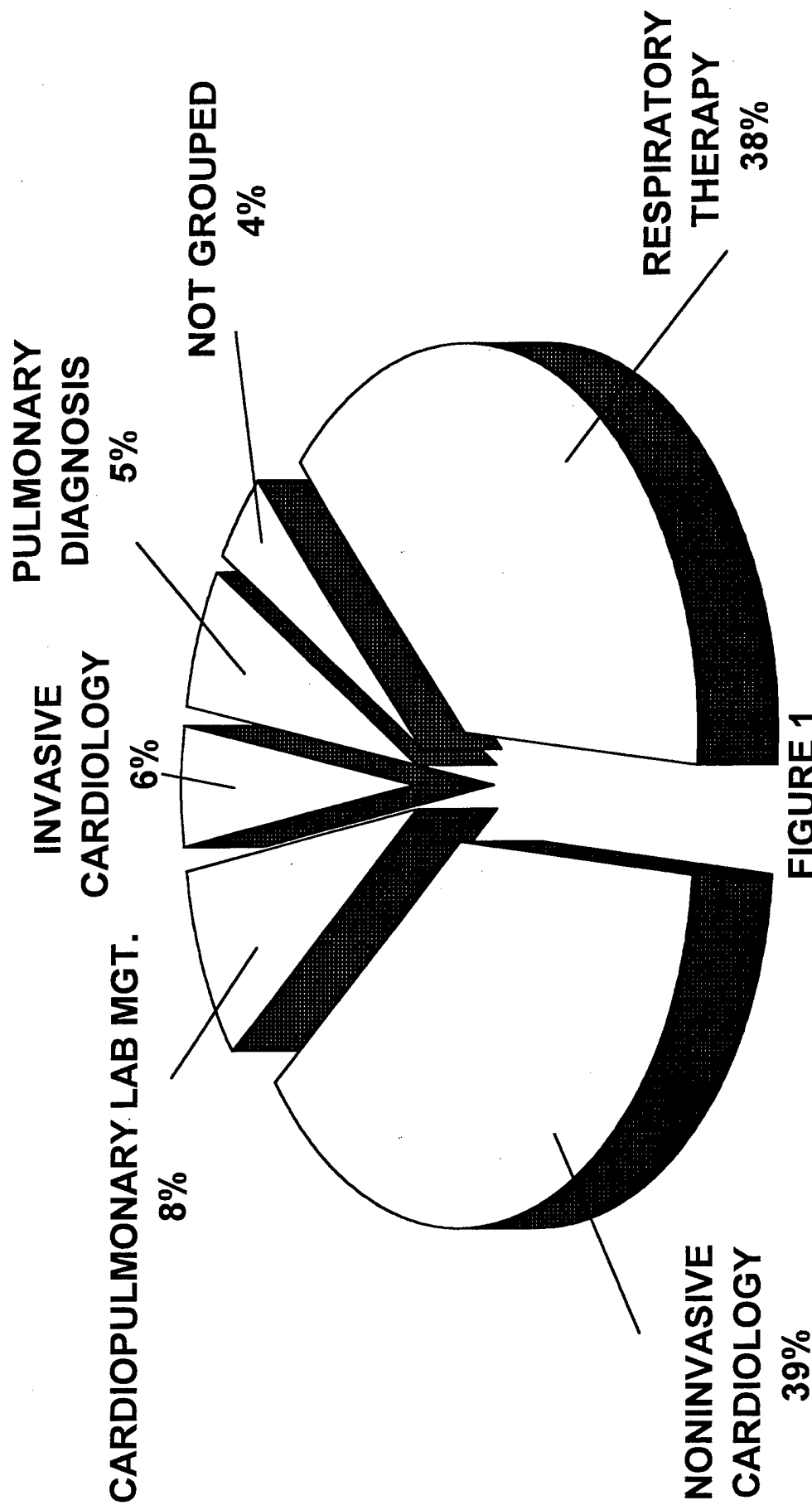


FIGURE 1

TABLE 3

RELATIVE PERCENT TIME SPENT PERFORMING DUTIES BY SPECIALTY JOBS

| DUTIES | RESPIRATORY THERAPY (ST016, N=118) | NONINVASIVE CARDIOLOGY (ST013, N=121) | PULMONARY DIAGNOSIS (ST012, N=16) | INVASIVE CARDIOLOGY (ST017, N=17) | CARDIO- PULMONARY LAB MGT (ST015, N=25) |
|--|--|---|---|---|--|
| A PERFORMING COMMON RESPIRATORY THERAPY, PULMONARY, CARDIOVASCULAR ACTIVITIES | 32 | 30 | 39 | 31 | 8 |
| B PERFORMING INVASIVE CARDIOVASCULAR ACTIVITIES | * | * | * | 35 | * |
| C PERFORMING NONINVASIVE CARDIOVASCULAR ACTIVITIES | * | 29 | 2 | 2 | 9 |
| D PERFORMING PULMONARY LAB. ACTIVITIES | 3 | 8 | 32 | 2 | 2 |
| E PERFORMING RESPIRATORY THERAPY ACTIVITIES | 51 | 12 | 5 | 2 | * |
| F PERFORMING ADMINISTRATIVE OR SUPPLY ACTIVITIES | 5 | 9 | 11 | 6 | 7 |
| G PERFORMING TRAINING ACTIVITIES | 3 | 4 | 6 | 6 | 16 |
| H PERFORMING MANAGEMENT & SUPERVISORY ACTIVITIES | 6 | 8 | 7 | 14 | 58 |

* Denotes less than 1 percent

NOTE: Columns may not add to 100 percent due to rounding

TABLE 4

SELECTED BACKGROUND DATA FOR SPECIALTY JOBS

| | RESPIRATORY THERAPY JOB | NONINVASIVE CARDIOLOGY JOB | PULMONARY DIAGNOSIS JOB | INVASIVE CARDIOLOGY JOB | CARDIO- PULMONARY LAB MGT JOB |
|---|-------------------------------|----------------------------------|-------------------------------|-------------------------------|--|
| NUMBER IN GROUP | 118 | 121 | 16 | 17 | 25 |
| PERCENT OF SAMPLE | 38% | 39% | 5% | 6% | 8% |
| PERCENT IN CONUS | 92% | 88% | 100% | 88% | 96% |
| DAFSC DISTRIBUTION: | | | | | |
| 4H031 | 36% | 21% | 13% | 0% | 0% |
| 4H051 | 44% | 55% | 63% | 65% | 20% |
| 4H071 | 20% | 25% | 25% | 35% | 68% |
| 4H091 | 0% | 0% | 0% | 0% | 8% |
| 4H001 | 0% | 0% | 0% | 0% | 4% |
| PREDOMINANT GRADE(S) | E-4/E-3 | E-4/E-5 | E-4/E-5 | E-5 | E-6/E-7 |
| AVERAGE MONTHS IN CAREER FIELD | 47 | 59 | 79 | 87 | 121 |
| AVERAGE MONTHS IN SERVICE | 79 | 87 | 106 | 120 | 200 |
| PERCENT IN FIRST ENLISTMENT (1-48 MOS TAFMS) | 50% | 33% | 12% | 0% | 0% |
| PERCENT SUPERVISING | 36% | 31% | 25% | 53% | 88% |
| AVERAGE NUMBER OF TASKS PERFORMED | 82 | 107 | 79 | 77 | 97 |

- perform routine ventilator checks
- record patient respiratory therapy results
- adjust ventilator settings
- perform suctioning procedures
- set up respiratory therapy alarms
- record progress of respiratory therapy treatment
- assist physician in performing extubation procedures
- set up continuous positive airway pressure (CPAP) devices
- assist physician in performing intubation procedures

Forty-four percent of these individuals hold the 5-skill level while 36 percent have a 3-skill level. Thirty-six percent are in the paygrade E-4 with an additional 29 percent in paygrade E-3. The average time in the career field is 4 years with an average of 6.5 years total time in service. This job contains the highest number of members in their first enlistment (50 percent). Eighty-three percent report working in a unit that has 13 or more personnel and 80 percent are assigned to a medical center.

II. NONINVASIVE CARDIOLOGY JOB (ST013). The 121 respondents in this job account for 39 percent of the survey sample. The responsibilities of these respondents differ from those with other cardiopulmonary jobs in that, while they perform many of the same general tasks, they spend more time on tasks related specifically to echocardiograms, Holter-monitoring tests, treadmill tests, and stress tests. Members with this job spend 29 percent of their duty time performing noninvasive cardiovascular activities (Table 3, Duty C), and 30 percent performing tasks common to respiratory therapy, pulmonary, or cardiovascular functions (Table 3, Duty A). They perform an average of 107 tasks, which is a higher average than for any other job within the survey sample. Typical tasks include:

- perform ECG
- assist physician in performing treadmill tests
- perform exercise stress tests
- prepare patients for treadmill tests
- set up exercise stress test equipment and materials
- prepare patients for exercise stress tests
- set up treadmill equipment
- perform Holter-monitoring tests
- prepare patients for Holter-monitoring tests
- set up thermodilution syringes

Fifty-five percent of these individuals hold the 5-skill level, while 25 percent have a 7-skill level. Thirty-six percent of these members are in paygrade E-4, with an additional 28 percent in paygrade E-5. The average time in the career field is 5 years (second least experienced) with an average of 7 years total time in service. Thirty-six percent report working in a unit that has between 4-6 personnel and 54 percent are assigned to a hospital.

III. PULMONARY DIAGNOSIS JOB (ST012). These 16 respondents account for 6 percent of the survey sample (smallest of all groups). The members in this job are distinguished by the time they spend performing tasks related specifically to performing flow/volume loop tests, performing routine spirometry tests, and performing user maintenance on pulmonary function systems. They perform an average of 79 tasks and spend 32 percent of their relative job time performing pulmonary functions (Table 3, Duty D). Thirty-nine percent of their relative job time is spent performing tasks common to respiratory therapy, pulmonary, or cardiovascular functions (Table 3, Duty A). Typical tasks include:

- perform routine spirometry tests
- perform flow/volume loop tests
- perform body plethysmograph tests
- set up lung diffusion equipment
- perform home oxygen evaluations
- perform exercise induced asthma tests
- perform postbronchodilator tests
- perform lung diffusion tests
- perform user maintenance on pulmonary function systems

Sixty-three percent of these individuals hold the 5-skill level while 25 percent have a 7-skill level. Thirty-eight percent of these members are in paygrade E-5, with an additional 31 percent in paygrade E-4. The average time in the career field is 6.5 years (second least experienced) with an average of 9 years total time in service. Forty-four percent report working in a unit that has 13 or more personnel and 88 percent are assigned to a hospital. One-hundred percent of the members report they are assigned to units within the CONUS.

IV. INVASIVE CARDIOLOGY JOB (ST017). These 17 respondents account for 6 percent of the survey sample. They perform a number of tasks dealing specifically with invasive cardiology. They are involved with cardiac catheterizations and cineangiography. Members with this job spend 35 percent of their duty time performing invasive cardiology functions (Table 3, Duty B), 31 percent performing tasks common to respiratory therapy, pulmonary, or cardiovascular functions (Table 3, Duty A), and 14 percent performing management and supervisory functions (Table 3, Duty H). They perform an average of 77 tasks and are distinguished by the time they spend performing the following tasks:

- set up cardiac catheterization trays
- set up sterile fields
- prepare site for catheter insertions
- set up x-ray equipment
- set up injectors
- connect transducers to equipment
- set up balloon pump equipment
- set up video equipment
- perform user maintenance on cineangiographic equipment
- set up thermodilution syringes

This is a very specialized job performed mainly in medical centers. Sixty-five percent report working in a unit that has 4-6 personnel assigned. Fifty-three percent of the respondents reported supervising other subordinates (the second largest percentage). Members with this job are somewhat more senior, as they average 10 years total time in service and 7 years average time in the career field. Fifty-nine percent of these members are in paygrade E-5 with an additional 24 percent in paygrade E-4. Sixty-five percent of these individuals hold the 5-skill level while 35 percent have the 7-skill level. There are no first-enlistment personnel assigned in this job.

V. CARDIOPULMONARY LABORATORY MANAGEMENT JOB (ST015). The 25 respondents in this job are responsible for managing cardiopulmonary laboratories, functions, and activities. To accomplish these goals, these members spend 58 percent of their relative job time performing cardiopulmonary laboratory management functions (Table 3, Duty H), 15 percent performing training activities (Table 3, Duty G), and 9 percent performing common respiratory therapy, pulmonary, or cardiovascular activities (Table 3, Duty A). They perform an average of 97 tasks, which is the second highest within the 4H0X1 career ladder. Tasks characteristic of the work performed include:

- direct administrative functions
- counsel subordinates concerning personal matters
- conduct general meetings, such as staff meetings, briefings, conferences, or workshops
- plan or schedule work assignments or priorities
- evaluate personnel for promotion, demotions, reclassification, or special awards
- develop self-inspection or self-assessment program checklists
- direct training functions
- write job or position descriptions

Members with this job are senior, as they average 17 years total time in service, 10 years average time in the career field, and make up only 8 percent of the survey sample. Sixty-eight percent of these individuals hold the 7-skill level, while 20 percent have the 5-skill level. Forty-four percent of these members are in paygrade E-6 and E-7. Sixty-eight percent report working in a medical center and supervise between 4-13 personnel assigned to an office. There are no first-enlistment personnel assigned to this job.

Comparison of Current Jobs to Previous Survey Findings

The results of the specialty job analysis were compared to those of OSR AFPT 90-904-926, Cardiopulmonary Laboratory, dated October 1990. After reviewing the jobs identified in 1990, all of the groups with substantial numbers of personnel could be matched to similar jobs in the current study (see Table 5). Even though some comparable groups from 1990 to 1996 reflect different percentages of the sample, this variation could generally be attributed to modifications in the task list or to the analysis approach used.

There were two jobs (accounting for about 30 percent of the survey sample) identified in the 1990 career ladder structure that did not have a direct match in the current study. These jobs include Cardiopulmonary Laboratory Job and Instructor Job. Tasks performed by personnel in these jobs, not identified in the current survey, are still being performed but not at a level which resulted in these members forming distinct jobs. Differences in job names reflect how tasks were grouped. Aside from these minor variations involving small numbers of personnel, the vast majority of the current sample were found to be performing jobs identified in 1990, thus displaying a relatively stable career ladder over time.

ANALYSIS OF DAFSC GROUPS

An analysis of DAFSC groups, in conjunction with the analysis of the career ladder structure, is an important part of each occupational survey. The DAFSC analysis identifies differences in tasks performed at the various skill levels. This information may then be used to evaluate how well career ladder documents, such as the AFMAN 36-2108 *Specialty Description* and the STS reflect what career ladder personnel are actually doing in the field and what is required of their members.

The distribution of skill-level groups across the career ladder specialty jobs is displayed in Table 6, while Table 7 offers another perspective by displaying the relative percent time spent on each duty across the skill-level groups. The Cardiopulmonary Laboratory career ladder has 69 percent of the sample holding either the 3- or 5-skill level. A typical pattern of progression is present, with personnel spending more of their relative time on duties involving supervisory,

TABLE 5

SPECIALTY JOB COMPARISONS BETWEEN CURRENT AND 1990 SURVEYS

| CURRENT SURVEY (N=309) | PERCENT OF SAMPLE | 1990 SURVEY (N=202) | PERCENT OF SAMPLE |
|---------------------------------------|-------------------------|--|-------------------------|
| RESPIRATORY THERAPY (N=118) | 38% | RESPIRATORY THERAPY (N=43) | 21% |
| - | | CARDIOPULMONARY FUNCTIONS CLUSTER | |
| - | | Cardiopulmonary Laboratory Job (N=54) | 27% |
| PULMONARY DIAGNOSIS (N=16) | 5% | Pulmonary Laboratory Job (N=13) | 6% |
| NONINVASIVE CARDIOLOGY (N=121) | 39% | Noninvasive Cardiology Job (N=16) | 8% |
| - | | NCOIC Job (N=34) | 17% |
| INVASIVE CARDIOLOGY (N=17) | 6% | CARDIAC CATHETERIZATION LABORATORY JOB (N=14) | 7% |
| - | | INSTRUCTOR JOB (N=6) | 3% |
| CARDIOPULMONARY LAB MANAGEMENT (N=25) | 8% | SUPERINTENDENT JOB (N=7) | 3% |

- Indicates no match in report

NOTE: Columns may not add to 100 percent due to rounding

TABLE 6

DISTRIBUTION OF AFSC 4H0X1 GROUP MEMBERS ACROSS SPECIALTY JOBS
(PERCENT)

| SPECIALTY JOBS | DAFSC 4H031 (N=70) | DAFSC 4H051 (N=150) | DAFSC 4H071 (N=86) | DAFSC 4H091/4H000 (N=3) |
|---|--------------------------|---------------------------|--------------------------|-------------------------------|
| I. RESPIRATORY THERAPY JOB (N=118) | 60 | 35 | 28 | - |
| II. NONINVASIVE CARDIOLOGY JOB (N=121) | 36 | 44 | 35 | - |
| III. PULMONARY DIAGNOSIS JOB (N=16) | 3 | 7 | 5 | - |
| IV. INVASIVE CARDIOLOGY JOB (N=17) | ~ | 7 | 7 | - |
| V. CARDIOPULMONARY LAB MANAGEMENT JOB (N=5) | ~ | 3 | 20 | 100 |
| VI. NOT GROUPED | 1 | 4 | 5 | - |

- Denotes duty not performed
~ Less than 1 percent

NOTE: Columns may not add to 100 percent due to rounding or nonresponse

TABLE 7

AVERAGE PERCENT TIME SPENT PERFORMING DUTIES BY AFSC 4H0X1 GROUPS
(RELATIVE PERCENT OF JOB TIME)

| DUTIES | DAFSC 4H031 (N=70) | DAFSC 4H051 (N=150) | DAFSC 4H071 (N=86) | DAFSC 4H091/4H000 (N=3) |
|---|--------------------------|---------------------------|--------------------------|-------------------------------|
| A PERFORMING COMMON RESPIRATORY THERAPY, PULMONARY, OR CARDIOVASCULAR ACTIVITIES | 37 | 31 | 20 | 5 |
| B PERFORMING INVASIVE CARDIOVASCULAR ACTIVITIES | 1 | 3 | 2 | - |
| C PERFORMING NONINVASIVE CARDIOVASCULAR ACTIVITIES | 10 | 17 | 11 | 2 |
| D PERFORMING PULMONARY LABORATORY ACTIVITIES | 7 | 6 | 5 | - |
| E PERFORMING RESPIRATORY THERAPY ACTIVITIES | 40 | 24 | 14 | - |
| F PERFORMING ADMINISTRATIVE OR SUPPLY ACTIVITIES | 4 | 7 | 8 | 5 |
| G PERFORMING TRAINING ACTIVITIES | 1 | 4 | 12 | 14 |
| H PERFORMING MANAGEMENT AND SUPERVISORY ACTIVITIES | 1 | 7 | 28 | 73 |

- Indicates no members or nonresponse

NOTE: Columns may not add up to 100 percent due to rounding.

managerial, and training tasks as they move upward toward the 7- or 9-skill level, or the CEM code. It is also obvious, though, that 7-skill level personnel are still involved with technical task performance, as will be pointed out in the specific skill-level group discussions below.

Skill-Level Descriptions

DAFSC 4H031. The 70 airmen in the 3-skill level group represent 23 percent of the survey sample. Sixty percent of the 3-skill level members are in the Respiratory Therapy Job and 36 percent are in the Noninvasive Cardiology Job (see Table 6). They perform an average of 82 tasks, with 37 tasks accounting for over 50 percent of their relative job time. Performing a highly technical job, 95 percent of their relative duty time is devoted to technical duties such as, performing respiratory therapy, noninvasive cardiovascular, and cardiovascular activities (see Table 7). Table 8 displays representative tasks performed by the highest percentages of these airmen.

DAFSC 4H051. The 150 airmen in the 5-skill level group constitute 49 percent of the survey sample (largest DAFSC group of the survey) and perform an average of 107 tasks, with 50 tasks accounting for over half of their relative job time. Forty-four percent of these 5-skill level members are in the Noninvasive Cardiology Job and 35 percent are in the Respiratory Therapy Job (see Table 6). Performing a highly technical job, 81 percent of their relative job time is devoted to duties covering respiratory therapy, pulmonary, and cardiovascular activities (see Table 7, Duties A through E). Table 9 displays representative tasks performed by the highest percentages of these airmen. Table 10 displays those tasks that reflect differences between the 3- and 5-skill level groups. A review of the tasks reveals that 5-skill level airmen perform virtually the same technical tasks as do the 3-skill level members. However, a higher percentage of 3-skill level members perform these tasks. The 5-skill level members are primarily differentiated in that they perform some management or supervisory functions, although to a limited degree.

DAFSC 4H071. The 86 NCOs in this 7-skill level group constitute 28 percent of the survey sample and perform an average of 97 tasks. Thirty-five percent of these 7-skill level members are in the Noninvasive Cardiology Job, 20 percent are in the Cardiopulmonary Laboratory Management Job, and 28 percent are in the Respiratory Therapy Job (see Table 6). Forty-eight percent of their relative job time is spent on the usual supervisory, management, and training duties and 52 percent is spent performing respiratory therapy, pulmonary, and cardiovascular activities (see Table 7). The display of tasks in Table 11 clearly shows these members performing both supervisory and some technical responsibilities. This is a reflection of the range and scope of their job. Table 12 displays those tasks that differentiate between the 5- and 7-skill level groups. The data show that the 5- and 7-skill level groups are essentially performing many of the same tasks. The only exception is that the tasks performed by a higher percentage of 5-skill level personnel are technical and operational in nature, whereas higher percentages of 7-skill level personnel perform supervisory and management functions.

TABLE 8
REPRESENTATIVE TASKS PERFORMED
BY DAFSC 4H031 PERSONNEL
(N=70)

| SELECTED TASKS | | PERCENT MEMBERS PERFORMING |
|----------------|--|----------------------------------|
| A24 | Perform arterial punctures | 94 |
| A1 | Administer medications | 90 |
| E167 | Instruct patients in use of handheld or updraft nebulizers | 89 |
| E194 | Set up nebulizers | 89 |
| E178 | Perform routine ventilator checks | 86 |
| A13 | Clean and disinfect nondisposable cardiopulmonary equipment or components | 86 |
| A31 | Perform universal precaution procedures | 84 |
| E195 | Set up oxygen delivery devices | 84 |
| A30 | Perform pulse oximeter tests | 84 |
| A37 | Practice infection control procedures | 83 |
| E185 | Record patient respiratory therapy results | 83 |
| E179 | Perform suctioning procedures | 83 |
| E170 | Monitor bronchodialator therapies | 81 |
| A29 | Perform blood-gas analyses | 81 |
| E155 | Adjust ventilator settings | 80 |
| E164 | connect flow meters | 80 |
| E199 | Set up volume ventilators | 80 |
| A39 | Prepare medications | 79 |
| A2 | Assemble or disassemble nondisposable cardiopulmonary equipment components | 79 |
| A20 | Interpret arterial blood-gasses | 79 |
| A17 | Dispose of contaminated materials | 79 |
| E198 | Set up respiratory therapy alarms | 77 |
| E154 | Adjust respiratory therapy alarms | 77 |
| E183 | Perform user maintenance on volume ventilators | 77 |
| A27 | Perform blood-gas quality control procedures | 76 |
| E186 | Record progress of respiratory therapy treatment | 74 |
| A11 | Calibrate blood-gas analyzers | 74 |
| A12 | Calibrate CO-oximeters | 70 |
| A50 | take and record vital signs | 70 |

Average number of tasks performed = 77

TABLE 9
 REPRESENTATIVE TASKS PERFORMED
 BY DAFSC 4H051 PERSONNEL
 (N=150)

| SELECTED TASKS | | PERCENT MEMBERS PERFORMING |
|----------------|--|----------------------------------|
| A31 | Perform universal precaution procedures | 83 |
| A37 | Practice infection control procedures | 83 |
| A18 | Inspect cardiopulmonary equipment | 80 |
| A30 | Perform pulse oximeter tests | 80 |
| A24 | Perform arterial punctures | 77 |
| A13 | Clean and disinfect nondisposable cardiopulmonary equipment or components | 77 |
| A50 | Take and record vital signs | 73 |
| A1 | Administer medications | 73 |
| A17 | Dispose of contaminated materials | 72 |
| A2 | Assemble or disassemble nondisposable cardiopulmonary equipment components | 71 |
| A20 | Interpret arterial blood-gasses | 68 |
| E194 | Set up nebulizers | 67 |
| A39 | Prepare medications | 67 |
| E164 | Connect flow meters | 67 |
| E195 | Set up oxygen delivery devices | 65 |
| A26 | Perform blood-gas analyses | 64 |
| E167 | Instruct patients in use of handheld or updraft nebulizers | 62 |
| E155 | Adjust ventilator settings | 62 |
| A16 | Compile physiological data for computer input, such as height, weight, and age | 60 |
| A19 | Interpret arrhythmias | 60 |
| A21 | Monitor electrocardiographic (ECG) tests | 59 |
| E178 | Perform routine ventilator checks | 59 |
| C98 | Perform ECG tests | 57 |
| E185 | Record patient respiratory therapy results | 57 |
| C80 | Assess and report ECG test results to physician | 55 |
| A14 | Clean patient treatment or examination rooms | 54 |
| A45 | Set up treadmill equipment | 53 |
| A8 | Assist physician in performing treadmill tests | 52 |
| A41 | Prepare patients for treadmill tests | 52 |
| C118 | Set up exercise stress test equipment and materials | 49 |
| C112 | Prepare patients for exercise stress tests | 49 |

Average number of tasks performed = 84

TABLE 10

TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 4H031 AND DAFSC 4H051 PERSONNEL
(PERCENT MEMBERS PERFORMING)

| SELECTED TASKS | DAFSC 4H031 (N=70) | DAFSC 4H051 (N=150) | DIFF |
|---|--------------------------|---------------------------|------|
| E183 Perform user maintenance on volume ventilators | 77 | 46 | 31 |
| E182 Perform user maintenance on pressure ventilators | 70 | 41 | 29 |
| E184 Perform user maintenance on Wright respirometers | 60 | 33 | 27 |
| E169 Maintain open airways | 71 | 45 | 26 |
| E162 Calculate dosage and strengths of respiratory therapy medications | 71 | 45 | 26 |
| E167 Instruct patients in use of handheld or updraft nebulizers | 89 | 62 | 27 |
| E166 Instruct patients in specialized breathing | 79 | 52 | 27 |
| E178 Perform routine ventilator checks | 86 | 59 | 27 |
| E185 Record patient respiratory therapy results | 83 | 57 | 26 |
| ----- | | | |
| F210 Maintain general correspondence, files, records, or laboratory reports | 17 | 49 | -32 |
| A46 Set up video equipment | 4 | 35 | -31 |
| F220 Schedule patients for treatments | 14 | 41 | -27 |
| H295 Participate in general meetings, such as staff meetings, briefings, conferences, or workshops, other than conducting | 10 | 37 | -27 |
| F211 Maintain patient appointment records | 10 | 37 | -27 |
| G227 Counsel trainees on training progress | 4 | 31 | -27 |
| F204 Coordinate purchase of special equipment or medical supplies with medical material personnel or vendors | 4 | 31 | -27 |
| G225 Conduct OJT | 16 | 41 | -25 |
| H257 Conduct supervisory performance feedback sessions | 0 | 25 | -25 |

TABLE 11
REPRESENTATIVE TASKS PERFORMED
BY DAFSC 4H071 PERSONNEL
(N=86)

| SELECTED TASKS | | PERCENT MEMBERS PERFORMING |
|----------------|--|----------------------------------|
| A31 | Perform universal precaution procedures | 85 |
| A37 | Practice infection control procedures | 83 |
| H258 | Counsel subordinates concerning personal matters | 77 |
| A18 | Inspect cardiopulmonary equipment | 77 |
| H307 | Supervise military personnel | 76 |
| F210 | Maintain general correspondence, files, records, or laboratory reports | 76 |
| H257 | Conduct supervisory performance feedback sessions | 76 |
| H295 | Participate in general meetings, such as staff meetings, briefings, conferences, or workshops, other than conducting | 74 |
| G236 | Evaluate progress of trainees | 73 |
| G227 | Counsel trainees on training progress | 73 |
| A24 | Perform arterial punctures | 73 |
| G225 | Conduct OJT | 72 |
| H310 | Write performance reports or supervisory appraisals | 67 |
| H283 | Evaluate personnel for compliance with performance standards | 67 |
| H261 | Determine or establish work assignments or priorities | 67 |
| A50 | Take and record vital signs | 67 |
| H259 | Determine or establish logistics requirements, such as personnel, equipment, tools, parts, supplies, or workspace | 65 |
| A19 | Interpret arrhythmias | 65 |
| G235 | Evaluate personnel to determine training needs | 63 |
| H293 | Interpret policies, directives, or procedures for subordinates | 63 |
| H254 | Conduct self-inspections or self-assessments | 62 |
| H264 | Develop or establish work schedules | 62 |
| G228 | Determine training requirements | 62 |
| H249 | Assign personnel to work areas or duty positions | 60 |
| F207 | Initiate requisitions for equipment or supplies | 59 |
| A21 | Monitor electrocardiographic (ECG) tests | 58 |
| F214 | Maintain stock levels of general supplies or forms | 57 |
| F211 | Maintain patient appointment records | 47 |

Average number of tasks performed = 112

TABLE 12

TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 4H051 AND DAFSC 4H071 PERSONNEL
(PERCENT MEMBERS PERFORMING)

| SELECTED TASKS | DAFSC 4H051 (N=150) | | DAFSC 4H071 (N=86) | | DIFF |
|--|------------------------|--|-----------------------|--|------|
| | | | | | |
| A15 Collect gas samples | 50 | | 36 | | 14 |
| E179 Perform suctioning procedures | 60 | | 48 | | 12 |
| E192 Set up IPPB equipment | 25 | | 13 | | 12 |
| A30 Perform pulse oximeter tests | 77 | | 66 | | 11 |
| A13 Clean and disinfect nondisposable cardiopulmonary equipment or components | 49 | | 38 | | 11 |
| E188 Set up continuous positive airway pressure (CPAP) devices | 67 | | 56 | | 11 |
| E194 Set up nebulizers | 72 | | 62 | | 10 |
| E198 Set up respiratory therapy alarms | 57 | | 48 | | 9 |
| A29 Perform CO-oximeter tests | 52 | | 44 | | 8 |
| E196 Set up positive end expiratory pressure (PEEP) devices | 49 | | 42 | | 7 |
| <hr/> | | | | | |
| H258 Counsel subordinates concerning personal matters | 25 | | 77 | | -52 |
| H257 Conduct supervisory performance feedback sessions | 25 | | 76 | | -51 |
| H259 Determine or establish logistics requirements, such as personnel, equipment, tools, parts, supplies, or workspace | 16 | | 65 | | -49 |
| H256 Conduct supervisory orientations for newly assigned personnel | 14 | | 63 | | -49 |
| H293 Interpret policies, directives, or procedures for subordinates | 14 | | 63 | | -49 |
| H283 Evaluate personnel for compliance with performance standards | 19 | | 67 | | -48 |
| H292 Inspect personnel for compliance with military standards | 17 | | 65 | | -48 |
| G228 Determine training requirements | 15 | | 62 | | -47 |
| H307 Supervise military personnel | 29 | | 76 | | -47 |
| H274 Establish performance standards for subordinates | 13 | | 58 | | -45 |

DAFSC 4H091/4H000. The 3 senior NCOs in this 9-skill level/CEM group constitute 1 percent of the survey sample and perform an average of 82 tasks. One-hundred percent of these 9-skill level/CEM members are in the Cardiopulmonary Laboratory Management Job (see Table 6). Table 7 shows that 86 percent of their relative job time is spent in the supervisory, management, and training duties (i.e., Duties G, and H). An additional 7 percent of their relative job time is spent on administrative functions. Table 13 clearly shows the breadth of supervisory and management functions 9-skill level and CEMs perform. It also reflects that these senior NCOs perform limited technical AFSC-specific tasks, accounting for only 9 percent of their relative job time. Table 14 displays those tasks that clearly show the differences between the 7-skill level and the 9-skill level/CEM groups. It also clearly reflects the upper-level management responsibilities' incumbent to the 9-skill levels/CEMs.

Summary

Progression in this career ladder follows a regular pattern of highly technical tasks focused at the lower skill levels, with a broadening into supervisory and management tasks. The 3-, 5-, and 7-skill level airmen perform many tasks in common and each group spends the vast majority of their relative job time on common respiratory therapy, pulmonary, and cardiovascular activities. The 5- and 7-skill level groups are performing similar technical tasks, with the exception of the 7-skill level members who perform some supervisory and management tasks. The 9-skill level/CEM group reflects upper level supervisory and management responsibilities.

ANALYSIS OF AFMAN 36-2108 *SPECIALTY DESCRIPTION*

Survey data were compared to the AFMAN 36-2108 *Specialty Description* for Cardiopulmonary Laboratory Apprentice, Cardiopulmonary Laboratory Journeyman, Cardiopulmonary Laboratory Craftsman, and Cardiopulmonary Laboratory Superintendent, all dated 31 October 1993.

The 3-/5-skill level specialty description appears complete and accurately portrays the range and technical nature of the job. The description for the Cardiopulmonary Laboratory Craftsman (AFSC 4H071) accurately reflects both the supervisory and the previously discussed technical nature of the job. The 9-skill level/CEM specialty description accurately reflects the dominance of supervisory and management activities performed by these members.

TABLE 13
REPRESENTATIVE TASKS PERFORMED
BY DAFSC 4H091/4H000 PERSONNEL
(N=3)

| SELECTED TASKS | | PERCENT MEMBERS PERFORMING |
|----------------|--|----------------------------------|
| H268 | Direct administrative functions | 100 |
| H306 | Supervise civilian employees | 100 |
| H307 | Supervise military personnel | 100 |
| H295 | Participate in general meetings, such as staff meetings, briefings, conferences, or workshops, other than conducting | 100 |
| H258 | Counsel subordinates concerning personal matters | 100 |
| G228 | Determine training requirements | 100 |
| H311 | Write recommendations for awards or decorations | 100 |
| H310 | Write performance reports or supervisory appraisals | 100 |
| H293 | Interpret policies, directives, or procedures for subordinates | 100 |
| H274 | Establish performance standards for subordinates | 100 |
| H259 | Determine or establish logistics requirements, such as personnel, equipment, tools, parts, supplies, or workspace | 100 |
| H300 | Plan or schedule work assignments or priorities | 100 |
| H252 | Conduct general meetings, such as staff meetings, briefings, conferences, or workshops | 100 |
| H257 | Conduct supervisory performance feedback sessions | 100 |
| H273 | Establish organizational policies, such as operating instructions (OIs) or standard operating procedures (SOPs) | 100 |
| H296 | Plan briefings, conferences, or workshops | 100 |
| G222 | Assign formal course instructions or on-the-job training (OJT) trainers or certifiers | 100 |
| H289 | Indorse performance reports or supervisory appraisals | 100 |
| H309 | Write job or position descriptions | 100 |
| H263 | Develop or establish work methods or procedures | 100 |
| H261 | Determine or establish work assignments or priorities | 100 |
| H270 | Draft agenda for general meetings, such as staff meetings, briefings, conferences, or workshops | 100 |
| H249 | Assign personnel to work areas or duty positions | 100 |
| H269 | Direct training functions | 100 |
| H304 | Schedule personnel for temporary duty (TDY) assignments, leaves, or passes | 100 |
| H291 | Initiate personnel action requests | 100 |
| F210 | Maintain general correspondence, files, records, or laboratory reports | 67 |
| G227 | Counsel trainees on training progress | 67 |
| G234 | Evaluate effectiveness of training programs, plans, or procedures | 67 |
| H253 | Conduct safety inspections of equipment or facilities | 67 |

Average number of tasks performed: 82

TABLE 14

TASKS WHICH BEST DIFFERENTIATE BETWEEN DAFSC 4H071 AND DAFSC 4H091/4H000 PERSONNEL
(PERCENT MEMBERS PERFORMING)

| SELECTED TASKS | DAFSC 4H071 (N=86) | DAFSC 4H091/4H000 (N=3) | DIFF |
|---|--------------------------|-------------------------------|------|
| G236 Evaluate progress of trainees | 73 | 0 | 73 |
| A2 Assemble or disassemble nondisposable cardiopulmonary | 72 | 0 | 72 |
| A38 Prepare cardiopulmonary equipment for sterilization | 67 | 0 | 67 |
| A50 Take and record vital signs | 67 | 0 | 67 |
| A19 Interpret arrhythmias | 65 | 0 | 65 |
| E164 Connect flow meters | 60 | 0 | 60 |
| A16 Compile physiological data for computer input, such as height, weight, and age | 58 | 0 | 58 |
| G240 Maintain training records or files | 58 | 0 | 58 |
| F214 Maintain stock levels of general supplies or forms | 57 | 0 | 57 |
| A31 Instruct patients in use of handheld or updraft nebulizers | 56 | 0 | 56 |
| H308 Write inspection reports | 15 | 100 | -85 |
| H265 Develop organizational or functional charts | 20 | 100 | -80 |
| H270 Draft agenda for general meetings, such as staff meetings, briefings, conferences, or workshops | 24 | 100 | -76 |
| H262 Develop inputs to mobility, contingency, disaster preparedness, or unit emergency or alert plans | 27 | 100 | -73 |
| H291 Initiate personnel action requests | 29 | 100 | -71 |
| H306 Supervise civilian employees | 29 | 100 | -71 |
| H296 Plan briefings, conferences, or workshops | 33 | 100 | -67 |
| H276 Evaluate accident or incident reports | 34 | 100 | -66 |
| H250 Assign sponsors for newly assigned personnel | 34 | 100 | -66 |
| H289 Indorse performance reports or supervisory appraisals | 35 | 100 | -65 |

ANALYSIS OF MAJCOMs

The tasks and background data for personnel of the seven MAJCOMs with the largest AFSC 4H0X1 populations were compared to determine whether job content varied as a function of command assignment. Generally, the jobs performed across the commands were similar, with only minor differences noted. The largest percentage of relative job time in each command is committed to tasks covering the performance of common respiratory therapy, pulmonary, or cardiovascular activities (see Table 15).

TRAINING ANALYSIS

One of the many sources of information that can be used to assist in the development of a training program relevant to the needs of personnel in their first enlistment is the OSR. Factors which may be used in evaluating training include the overall description of the job being performed by first-enlistment personnel and their overall distribution across career ladder jobs, percentages of first-job (1-24 months TAFMS) or first-enlistment (1-48 months TAFMS) members performing specific tasks, or using certain equipment or tools, as well as TE and TD ratings (previously explained in the **SURVEY METHODOLOGY** section).

To assist specifically in evaluation of the STS, technical school personnel from the 381 TRS/CSC matched JI tasks to appropriate sections and subsections of the Cardiopulmonary Laboratory STS for course J3AQR4H031 (Phase I) dated July 1995. It was this matching upon which comparison to those documents was based. A complete computer listing displaying the percent members performing tasks, TE and TD ratings for each task, along with the STS matching, has been forwarded to the technical school for the use in further detailed reviews of appropriate training documents. A summary of this information is presented below.

First-Enlistment Personnel

In this study, there are 101 members in their first enlistment (1-48 months TAFMS), representing 33 percent of the total survey sample. The activities performed by these personnel are highly technical in nature, accounting for approximately 94 percent of their relative duty time (see Table 16). Reviewing Table 16, it is clearly evident that first-enlistment personnel are spending most of their time performing tasks under Duty A (Performing Common Respiratory Therapy, Pulmonary, or Cardiovascular Activities) and Duty E (Performing Respiratory Therapy Activities). Distribution of first-enlistment personnel across the career ladder jobs is displayed in Figure 2, which shows that the largest percentage of first-enlistment airmen work in the Respiratory Therapy Job (58 percent). Table 17 lists representative tasks performed by these members and shows that most tasks relate to respiratory therapy activities.

TABLE 15
PERCENT TIME SPENT ON DUTIES BY MAJCOM GROUPS

| DUTIES | USAFE (N=11) | USAF (N=5) | AETC (N=93) | PACAF (N=10) | ACC (N=36) | AMC (N=90) | AFMC (N=61) |
|---|-----------------|---------------|----------------|-----------------|---------------|---------------|----------------|
| A PERFORMING COMMON RESPIRATORY THERAPY, PULMONARY, OR CARDIOVASCULAR ACTIVITIES | 32 | 28 | 27 | 23 | 29 | 33 | 28 |
| B PERFORMING INVASIVE CARDIOVASCULAR ACTIVITIES | 2 | - | 4 | * | * | * | 2 |
| C PERFORMING NONINVASIVE CARDIOVASCULAR ACTIVITIES | 9 | 23 | 10 | 18 | 21 | 12 | 15 |
| D PERFORMING PULMONARY LABORATORY ACTIVITIES | 9 | 10 | 5 | 8 | 7 | 6 | 6 |
| E PERFORMING RESPIRATORY THERAPY ACTIVITIES | 24 | 19 | 30 | 19 | 16 | 27 | 21 |
| F PERFORMING ADMINISTRATIVE OR SUPPLY ACTIVITIES | 5 | 8 | 6 | 9 | 9 | 7 | 6 |
| G PERFORMING TRAINING ACTIVITIES | 4 | 2 | 6 | 7 | 4 | 6 | 6 |
| H PERFORMING MANAGEMENT AND SUPERVISORY ACTIVITIES | 14 | 10 | 12 | 16 | 13 | 8 | 16 |

* Denotes less than 1 percent

- Denotes duty not performed

NOTE: Columns may not add up to 100 percent due to rounding

TABLE 16

RELATIVE PERCENT OF TIME SPENT ACROSS DUTIES
BY FIRST-ENLISTMENT PERSONNEL

| DUTIES | PERCENT TIME SPENT |
|--|--------------------------|
| A. PERFORMING COMMON RESPIRATORY THERAPY, PULMONARY, OR CARDIOVASCULAR ACTIVITIES | 37 |
| B. PERFORMING INVASIVE CARDIOVASCULAR ACTIVITIES | - |
| C. PERFORMING NONINVASIVE CARDIOVASCULAR ACTIVITIES | 12 |
| D. PERFORMING PULMONARY LABORATORY ACTIVITIES | 7 |
| E. PERFORMING RESPIRATORY THERAPY ACTIVITIES | 38 |
| F. PERFORMING ADMINISTRATIVE OR SUPPLY ACTIVITIES | 5 |
| G. PERFORMING TRAINING ACTIVITIES | - |
| H. PERFORMING MANAGEMENT AND SUPERVISORY ACTIVITIES | - |

- Denotes less than 1 percent

NOTE: Columns may not add up to 100 percent due to rounding

CARDIOPULMONARY LABORATORY FIRST-ENLISTMENT JOBS

(N=101)

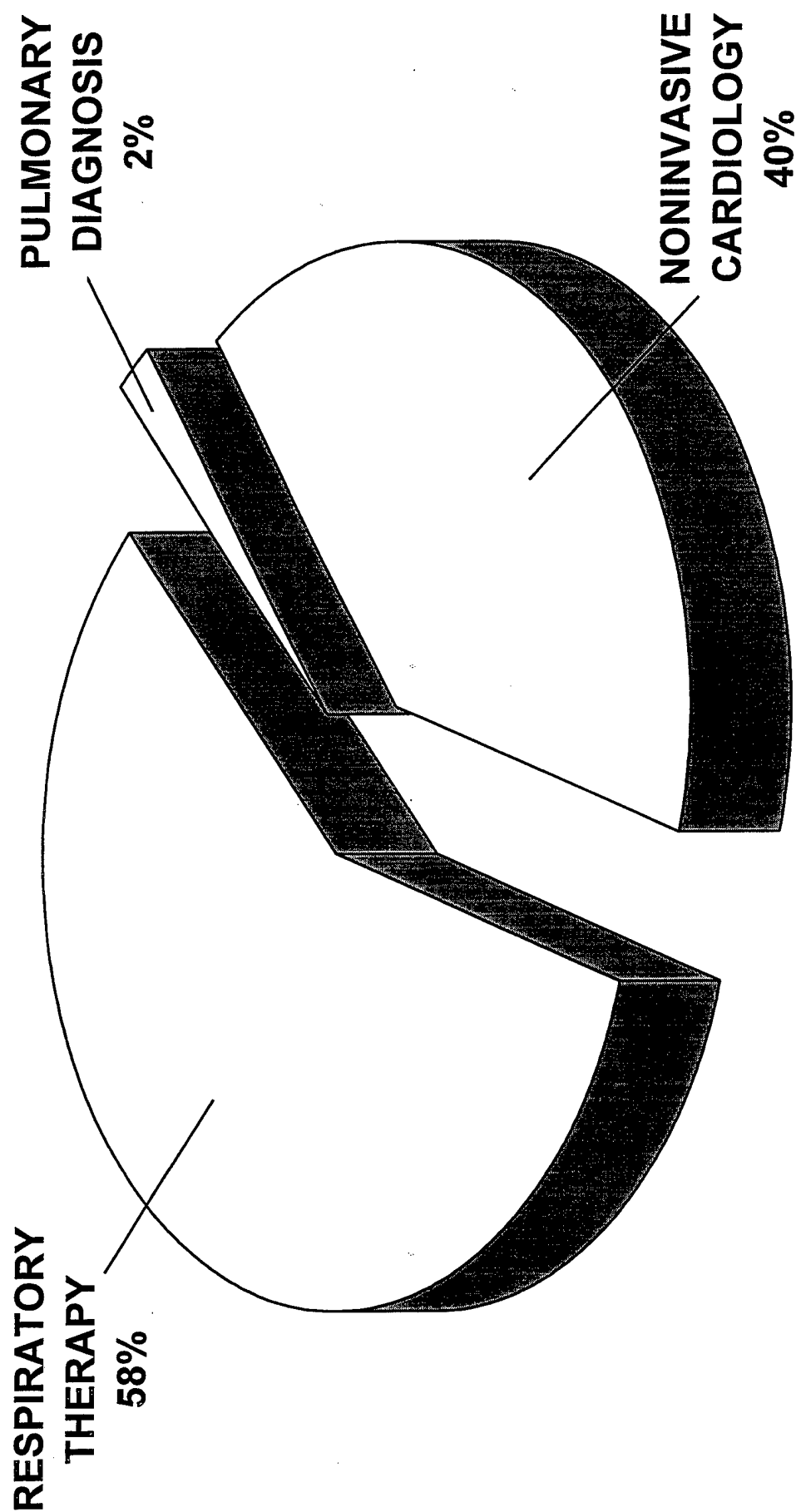


FIGURE 2

TABLE 17
REPRESENTATIVE TASKS PERFORMED BY
FIRST-ENLISTMENT PERSONNEL

| SELECTED TASKS | PERCENT MEMBERS PERFORMING (N=101) |
|---|---|
| A24 Perform arterial punctures | 94 |
| A1 Administer medications | 89 |
| A31 Perform universal precautions procedures | 86 |
| E194 Set up nebulizers | 86 |
| E167 Instruct patients in use of handheld or updraft nebulizers | 86 |
| E178 Perform routine ventilator checks | 83 |
| A30 Perform pulse oximeter tests | 83 |
| A37 Practice infection control procedures | 81 |
| A39 Prepare medications | 80 |
| E185 Record patient respiratory therapy results | 80 |
| E195 Set up oxygen delivery devices | 80 |
| A26 Perform blood-gas analyses | 80 |
| A13 Clean and disinfect nondisposable cardiopulmonary equipment or components | 80 |
| A20 Interpret arterial blood-gasses | 80 |
| E155 Adjust ventilator settings | 79 |
| E179 Perform suctioning procedures | 79 |
| E164 Connect flow meters | 79 |
| E199 Set up volume ventilators | 78 |
| E170 Monitor bronchodilator therapies | 77 |
| E190 Set up humidifiers | 77 |
| E198 Set up respiratory therapy alarms | 76 |
| E154 Adjust respiratory therapy alarms | 76 |
| A2 Assemble or disassemble nondisposable cardiopulmonary equipment components | 76 |
| A27 Perform blood-gas quality control procedures | 73 |
| A50 Take and record vital signs | 73 |
| E196 Set up positive end expiratory pressure (PEEP) devices | 72 |
| A11 Calibrate blood-gas analyzers | 71 |
| E186 Record progress of respiratory therapy treatment | 70 |

Average number of tasks performed = 76

One of the objectives of this survey project was to gather data for the training wing pertaining to the various types of equipment used, operated, or maintained. Accordingly, Table 18 presents percentages of first-enlistment airmen responding to this question concerning their activities involving these items. Information was gathered on 71 different types of equipment. Thirty-nine different types of equipment had responses of greater than 50 percent members performing. This table illustrates the large variety of equipment by a large percentage of these members to perform their job. This type of information is useful for both technical school and MAJCOM training personnel to assist them in focusing limited training time or other resources on the most utilized items.

Training Emphasis (TE) and Task Difficulty (TD) Data

TE and TD data are secondary factors that can assist technical school personnel in deciding which tasks should be emphasized in entry-level training. These ratings, based on the judgments of senior career ladder NCOs working at operational units in the field, are collected to provide training personnel with a rank-ordering of those tasks in the JI considered important for first-enlistment training (TE) (see Table 19 for the top-rated tasks) along with a measure of the difficulty (TD) of the JI tasks (see top rated tasks presented in Table 20). A total of 23 tasks were rated high in TE, having a rating of over 5.60, with 100 percent of these tasks matched to the STS. Tasks rated highest in TE are technical tasks which include: performing cardiopulmonary resuscitation, performing arterial punctures, preparing medications, adjusting ventilator settings, setting up volume ventilators, and performing universal precaution procedures. Although these tasks are rated high in TE and viewed as necessary for training of first-enlistment personnel, many of these tasks are for the most part not viewed as difficult to learn. Technical tasks receiving highest TD ratings relate to: Duty B, Invasive Cardiovascular Activities. When combined with data on the percentages of first-enlistment personnel performing tasks, comparisons can then be made to determine if training adjustments are necessary. For example, tasks receiving high ratings on both task factors, accompanied by moderate to high percentages performing, may warrant resident training. Those tasks receiving high task factor ratings, but low percentages performing, may be more appropriately planned for OJT programs within the career ladder. Low task factor ratings may highlight tasks best omitted from training for first-enlistment personnel, but this decision must be weighed against percentages of personnel performing the tasks, command concerns, and criticality of the tasks.

To assist technical school personnel, AFOMS has developed a computer program that incorporates these secondary factors and the percentage of first-enlistment personnel performing each task to produce an Automated Training Indicator (ATI) for each task. These indicators correspond to training decisions listed and defined in the Training Decision Logic Table found in Attachment 2, AETCI 36-2601, Occupational Analysis Program, and allows course personnel to quickly focus their attention on those tasks which are most likely to qualify for initial resident course consideration.

TABLE 18

EQUIPMENT ITEMS USED BY MORE THAN 50 PERCENT OF FIRST-JOB
OR FIRST-ENLISTMENT AFSC 4H0X1 PERSONNEL

| EQUIPMENT | PERCENT MEMBERS USING | |
|--|-----------------------|--------------------|
| | 1ST JOB (N=55) | 1ST ENL (N=101) |
| Analyzers, Blood-Gas | 80 | 82 |
| Analyzers, Computerized Pulmonary Function | 51 | 49 |
| Analyzers, Gas, Other than Blood-Gas | 58 | 55 |
| Barometers | 36 | 37 |
| Bi-Level Postitive Airway Pressure (BiPAP) Equipment | 64 | 65 |
| Bronchoscopy Light Sources | 36 | 36 |
| Calculators | 75 | 72 |
| Compressors | 64 | 64 |
| Continuous Positive Airway Pressure (CPAP) Equipment | 71 | 75 |
| Co-Oximeters | 78 | 79 |
| Defibrillators | 40 | 46 |
| Devices, Humidification | 87 | 86 |
| Devices, Incentive Spirometer | 87 | 88 |
| Diffusing Capacity Measurement Systems | 36 | 39 |
| Echocardiography Systems, Doppler | 33 | 31 |
| Echocardiography Systems, M-Mode | 36 | 33 |
| Echocardiography Systems, Two Dimensional | 31 | 30 |
| Electrocardiographic Machines | 55 | 53 |
| Equipment Dryers | 44 | 39 |
| Flow Meters | 87 | 88 |
| Holter Monitor Equipment | 45 | 46 |
| Monitors, End Tidal CO2 | 38 | 41 |
| Nebulizers, Handheld | 96 | 93 |
| Nebulizers, Ultrasonic | 47 | 46 |
| Negative Inspiratory Force Meters | 73 | 75 |
| Oximeters | 75 | 75 |
| Oxygen Blenders | 78 | 74 |
| O2 Concentrators | 56 | 48 |
| Pressure Regulators | 47 | 49 |
| Programmable Computers | 36 | 33 |
| Respirometers | 38 | 43 |
| Resuscitation Bags | 78 | 87 |
| Small Particle Aerosol Generators (SPAGs) | 40 | 37 |
| Spirometers | 67 | 67 |
| Suction Machines | 84 | 85 |
| Treadmills | 47 | 48 |
| Ventilators, High Frequency | 55 | 47 |
| Ventilators, Pressure | 80 | 79 |
| Ventilators, Volume | 87 | 86 |

TABLE 19

DAFSC 4H0X1 TASKS WITH HIGHEST TRAINING EMPHASIS RATINGS

| | | TNG EMP* | % MBRS PERFORMING | | TASK DIFF** |
|------|---|-------------|----------------------|-----------------------|----------------|
| | | | 1ST JOB (N=55) | 1ST ENL (N=101) | |
| A28 | Perform cardiopulmonary resuscitation (CPR) | 8.48 | 67 | 73 | 5.16 |
| A24 | Perform arterial punctures | 8.05 | 95 | 94 | 5.59 |
| A19 | Interpret arrhythmias | 7.90 | 51 | 55 | 6.78 |
| A39 | Prepare medications | 7.81 | 78 | 80 | 4.06 |
| E155 | Adjust ventilator settings | 7.62 | 76 | 79 | 5.01 |
| A20 | Interpret arterial blood-gasses | 7.57 | 76 | 80 | 6.58 |
| E199 | Set up volume ventilators | 7.48 | 76 | 78 | 5.76 |
| A26 | Perform blood-gas analyses | 7.38 | 80 | 80 | 4.94 |
| E197 | Set up pressure ventilators | 7.29 | 75 | 73 | 5.74 |
| A31 | Perform universal precaution procedures | 7.29 | 84 | 86 | 3.03 |
| C114 | Scan Holter-monitoring tapes for abnormalities | 7.19 | 42 | 40 | 5.89 |
| E198 | Set up respiratory therapy alarms | 7.10 | 73 | 76 | 5.04 |
| E179 | Perform suctioning procedures | 7.10 | 78 | 79 | 5.27 |
| E162 | Calculate dosage and strengths of respiratory therapy medications | 7.00 | 65 | 62 | 5.77 |
| E154 | Adjust respiratory therapy alarms | 7.00 | 73 | 76 | 4.31 |
| A37 | Practice infection control procedures | 6.95 | 80 | 81 | 3.55 |
| E156 | Administer emergency treatment for adverse reactions to respiratory medications | 6.95 | 36 | 43 | 5.38 |
| A27 | Perform blood-gas quality control procedures | 6.86 | 75 | 73 | 5.08 |
| A1 | Administer medications | 6.81 | 91 | 89 | 4.25 |
| C102 | Perform Holter-monitoring tests | 6.81 | 44 | 43 | 4.74 |
| C98 | Perform ECG tests | 6.76 | 53 | 52 | 4.15 |
| E161 | Assist physician in weaning patients from ventilators | 6.67 | 76 | 77 | 6.41 |
| E178 | Perform routine ventilator checks | 6.67 | 84 | 83 | 5.03 |

* TE MEAN = 3.44; SD = 2.16

** TD MEAN = 5.00; SD = 1.00

TABLE 20

DAFSC 4H0X1 TASKS WITH HIGHEST TASK DIFFICULTY RATINGS

| TASK DIFF* | | PERCENT MEMBERS PERFORMING | | | | | | TNG EMP |
|---------------|--|-------------------------------|-----------------------|-------|--|----------------|------|------------|
| | | 1ST JOB (N=55) | 1ST ENL (N=101) | DAFSC | | DAFSC 4H071 | | |
| | | | | 4H051 | | | | |
| B55 | Assist physician in performing balloon pump insertions | 0 | 0 | 8 | | 7 | 1.71 | |
| B57 | Assist physician in performing coronary arteriographs | 0 | 0 | 9 | | 6 | 1.71 | |
| B60 | Assist physician in performing electrophysiology (EP) studies | 0 | 0 | 4 | | 7 | 1.62 | |
| B53 | Assist physician in performing angioplasties | 0 | 0 | 5 | | 7 | 1.86 | |
| B58 | Assist physician in performing coronary atherectomy procedures | 0 | 0 | 3 | | 1 | 1.14 | |
| B62 | Assist physician in performing stent insertions | 0 | 0 | 5 | | 8 | 1.57 | |
| B54 | Assist physician in performing atrioventricular (AV) nodal ablations | 0 | 0 | 4 | | 3 | 1.19 | |
| B56 | Assist physician in performing cardiac pacemaker insertions | 0 | 0 | 8 | | 6 | 1.43 | |
| B52 | Assist physician in performing angiographs | 0 | 0 | 8 | | 8 | 1.90 | |
| B59 | Assist physician in performing coronary ultrasound procedures | 0 | 0 | 3 | | 3 | 1.29 | |
| B61 | assist physician in performing shunt detections | 4 | 2 | 9 | | 6 | 1.62 | |
| C100 | Perform exercise echocardiograms | 20 | 12 | 16 | | 20 | 5.38 | |
| C96 | Perform cardiac-doppler echocardiograms | 25 | 23 | 28 | | 26 | 5.67 | |
| B63 | Assist physician in performing thrombolytic therapy | 0 | 0 | 4 | | 2 | 1.52 | |
| B74 | Set up AV nodal ablations | 0 | 0 | 3 | | 3 | 1.14 | |
| B64 | Calculate results of catheterization procedures | 0 | 0 | 7 | | 7 | 1.62 | |
| C97 | Perform color-doppler echocardiograms | 29 | 25 | 29 | | 26 | 5.76 | |
| C88 | Assist physician in performing transesophageal echocardiograph studies | 18 | 13 | 19 | | 14 | 4.33 | |
| C81 | Assess and report echocardiogram test results to physician | 24 | 23 | 33 | | 26 | 5.48 | |

TD MEAN = 5.00 SD = 1.00

TE MEAN = 3.44 SD = 2.16

Various lists of tasks, accompanied by TE and TD ratings, and where appropriate, ATI information, are contained in the TRAINING EXTRACT package and should be reviewed in detail by technical school personnel. (For a more detailed explanation of TE and TD ratings, see Task Factor Administration in the SURVEY METHODOLOGY section of this report.)

Specialty Training Standard (STS)

A comprehensive review of STS 4H0X1, dated July 1995, compared survey data to STS items. STS paragraphs containing general knowledge information, mandatory entries, and subject-matter-knowledge elements were not reviewed. Elements with performance objectives were compared against the standard set forth in AETCI 36-2601, paragraph 2.2. Typically, STS sections and subsections matched to tasks which have sufficiently high TE and TD ratings, and are performed by at least 20 percent of personnel in appropriate experience or skill-level groups (such as first-enlistment (1-48 months TAFMS) and 5- and 7-skill level groups), are considered to be supported and should be considered for inclusion in the STS. Likewise, paragraphs having tasks with less than 20 percent performing across all of the criterion groups should be considered for deletion from the STS.

Using this criterion, STS 4H0X1 was found to be well supported by occupational survey data. Overall, the STS captures the work performed by this career ladder as identified by the career ladder structure analysis of this AFSC. Even though some elements did not have high percentages of personnel performing matched tasks, the fact that the supporting tasks were part of an identifiable job being performed in the career ladder supports the retention of the STS element involving those tasks.

Tasks not matched to any entry of the STS are listed at the end of the STS computer listing. These were reviewed extensively to determine if there were any technical tasks concentrated around any critical functions or jobs. The data show all unreferenced tasks centered around performing management and supervisory activities (Duty H).

Plan of Instruction (POI)

An analysis of the POI for course J3AQR4H031 was not conducted for this report due to the recent revisions being worked at the technical training school.

JOB SATISFACTION ANALYSIS

An examination of the job satisfaction indicators of various groups can give career ladder managers a better understanding of some of the factors which may affect the job performance of airmen in the career ladder. Questions covering job interest, perceived utilization of talents and training, sense of accomplishment from work, and reenlistment intentions were included in the survey booklet to provide indications of job satisfaction.

Table 21 presents job satisfaction data for AFSC 4H0X1 TAFMS groups, together with TAFMS data for a comparative sample of medical career ladders surveyed in 1995. This data can give a relative measure of how the job satisfaction of AFSC 4H0X1 personnel compares with other similar Air Force specialties. Review of Table 24 reflects that responses from AFSC 4H0X1 TAFMS groups regarding job interest, use of talents, use of training, and sense of accomplishment gained from work are all positive (81 percent or more). For one group (1-48 months TAFMS) in the current study, lower positive responses were noted in reenlistment intentions than for the comparative sample.

An indication of how job satisfaction perceptions have changed over time is provided in Table 22, where again TAFMS data for 1996 survey respondents are presented, along with data from respondents in the last OSR involving this career ladder, published in 1990 (AFSC 904X0). Comparison of job satisfaction indicator responses of the current survey TAFMS groups to those in the 1990 survey indicates that current job satisfaction responses are somewhat higher than those in 1990. The most notable exception is the somewhat lower positive responses concerning reenlistment intentions by the current survey in the 49-96 months TAFMS group compared to those in 1990. Expressed job interest for the 1-48 months TAFMS group and 97+ TAFMS group are significantly higher, along with perceived use of talents for the 1-48 months TAFMS, 97+ months TAFMS, and perceived use of training for all TAFMS groups.

Finally, Table 23 presents job satisfaction responses from personnel in the specialty jobs discussed in the **SPECIALTY JOBS** section of this report. An examination of these data can show how overall job satisfaction may be influenced by the type of job performed. Review of the job satisfaction data for the Cardiopulmonary Laboratory career ladder reveals generally positive responses in the five job satisfaction indicators across all jobs.

A few jobs within this study revealed low ratings for some of the five job satisfaction indicators. Personnel in the Pulmonary Diagnosis Job revealed only 69 percent responding positively to sense of accomplishment from their job. Personnel in the Respiratory Therapy and Noninvasive Cardiology jobs show low reenlistment intentions, while the Invasive Cardiology and Pulmonary Diagnosis jobs show high reenlistment intentions.

TABLE 21

JOB SATISFACTION INDICATORS FOR AFSC 4H0X1 TAFMS GROUPS
IN CURRENT STUDY TO A COMPARATIVE SAMPLE
(PERCENT MEMBERS RESPONDING)

| | 1-48 MONTHS TAFMS | | 49-96 MONTHS TAFMS | | 97+ MONTHS TAFMS | |
|--|--------------------------|---------------------------|-------------------------|---------------------------|--------------------------|---------------------------|
| | AFSC 4H0X1 (N=101) | COMP SAMPLE (N=518) | AFSC 4H0X1 (N=69) | COMP SAMPLE (N=427) | AFSC 4H0X1 (N=139) | COMP SAMPLE (N=725) |
| <u>EXPRESSED JOB INTEREST:</u> | | | | | | |
| INTERESTING | 96 | 86 | 90 | 87 | 93 | 84 |
| SO-SO | 3 | 10 | 7 | 8 | 6 | 11 |
| DULL | * | 4 | 1 | 5 | 1 | 5 |
| NONRESPONSE | - | - | 1 | - | - | - |
| <u>PERCEIVED USE OF TALENTS:</u> | | | | | | |
| FAIRLY WELL TO VERY WELL | 94 | 88 | 89 | 91 | 93 | 88 |
| NONE TO VERY LITTLE | 6 | 11 | 10 | 8 | 6 | 11 |
| NONRESPONSE | - | - | - | 1 | - | - |
| <u>PERCEIVED USE OF TRAINING:</u> | | | | | | |
| FAIRLY WELL TO PERFECT | 96 | 90 | 88 | 91 | 91 | 82 |
| NONE TO VERY LITTLE | 4 | 9 | 12 | 9 | 9 | 17 |
| <u>SENSE OF ACCOMPLISHMENT FROM JOB:</u> | | | | | | |
| SATISFIED | 90 | 51 | 81 | 63 | 81 | 69 |
| NEUTRAL | 6 | 49 | 13 | 36 | 6 | 9 |
| DISSATISFIED | 4 | 0 | 6 | 1 | 13 | 22 |
| <u>REENLISTMENT INTENTIONS:</u> | | | | | | |
| YES OR PROBABLY YES | 53 | 51 | 53 | 81 | 76 | 77 |
| NO OR PROBABLY NO | 45 | 49 | 45 | 9 | 8 | 9 |
| WILL RETIRE | 1 | 0 | 1 | 10 | 16 | 14 |

* Less than 1 percent

NOTE: Columns may not add to 100 percent due to rounding or nonresponse
Comparative data are from AFSCs 4A2X1, 4T0X1, and 4T0X2 surveyed in 1995

TABLE 22

COMPARISON OF JOB SATISFACTION INDICATORS FOR AFSC 4H0X1
TAFMS GROUPS IN CURRENT STUDY TO PREVIOUS STUDY FOR
(PERCENT MEMBERS RESPONDING)

| | 1-48 MONTHS TAFMS | | 49-96 MONTHS TAFMS | | 97+ MONTHS TAFMS | |
|--|----------------------|----------------|-----------------------|----------------|---------------------|----------------|
| | CURRENT | | CURRENT | | CURRENT | |
| | 4H0X1 (N=101) | 1990 (N=56) | 4H0X1 (N=69) | 1990 (N=61) | 4H0X1 (N=139) | 1990 (N=88) |
| <u>EXPRESSED JOB INTEREST:</u> | | | | | | |
| INTERESTING | 96 | 84 | 90 | 92 | 93 | 80 |
| SO-SO | 3 | 5 | 7 | 3 | 6 | 14 |
| DULL | * | 11 | 1 | 5 | * | 5 |
| NONRESPONSE | - | - | 1 | - | - | - |
| <u>PERCEIVED USE OF TALENTS:</u> | | | | | | |
| FAIRLY WELL TO PERFECT | 94 | 84 | 89 | 90 | 93 | 83 |
| NONE TO VERY LITTLE | 6 | 16 | 10 | 10 | 6 | 17 |
| <u>PERCEIVED USE OF TRAINING:</u> | | | | | | |
| FAIRLY WELL TO PERFECT | 96 | 82 | 88 | 90 | 91 | 86 |
| NONE TO VERY LITTLE | 4 | 18 | 12 | 15 | 9 | 14 |
| <u>SENSE OF ACCOMPLISHMENT FROM JOB:</u> | | | | | | |
| SATISFIED | 90 | 73 | 81 | 82 | 81 | 74 |
| NEUTRAL | 6 | 9 | 13 | 3 | 6 | 8 |
| DISSATISFIED | 4 | 18 | 6 | 15 | 13 | 15 |
| NONRESPONSE | - | - | - | - | - | 3 |
| <u>REENLISTMENT INTENTIONS:</u> | | | | | | |
| YES OR PROBABLY YES | 53 | 54 | 53 | 62 | 76 | 52 |
| NO OR PROBABLY NO | 45 | 46 | 45 | 36 | 8 | 12 |
| WILL RETIRE | 1 | 0 | 1 | 2 | 16 | 35 |

* Less than 1 percent

NOTE: Columns may not add to 100 percent due to rounding or nonresponse

TABLE 23

JOB SATISFACTION INDICATORS FOR AFSC 4H0X1 JOB GROUPS
(PERCENT MEMBERS RESPONDING)

| | RESP THERAPY (ST016) | NON INVASIVE CARDIOLOGY (ST013) | PULMONARY DIAGNOSIS (ST012) | INVASIVE CARDIOLOGY (ST017) | CARDIO- PULMONARY LAB MGT (ST015) |
|--|----------------------------|--|-----------------------------------|-----------------------------------|--|
| <u>EXPRESSED JOB INTEREST:</u> | | | | | |
| INTERESTING | 96 | 90 | 88 | 100 | 92 |
| SO-SO | 3 | 8 | 12 | 0 | 8 |
| DULL | 1 | 2 | 0 | 0 | 0 |
| <u>PERCEIVED USE OF TALENTS:</u> | | | | | |
| FAIRLY WELL TO PERFECT | 94 | 90 | 100 | 100 | 96 |
| NONE TO VERY LITTLE | 5 | 10 | 0 | 0 | 4 |
| <u>PERCEIVED USE OF TRAINING:</u> | | | | | |
| FAIRLY WELL TO PERFECT | 95 | 91 | 94 | 82 | 92 |
| NONE TO VERY LITTLE | 5 | 9 | 6 | 18 | 8 |
| <u>SENSE OF ACCOMPLISHMENT FROM JOB:</u> | | | | | |
| SATISFIED | 87 | 82 | 69 | 94 | 80 |
| NEUTRAL | 8 | 8 | 25 | 0 | 0 |
| DISSATISFIED | 5 | 10 | 6 | 6 | 20 |
| <u>REENLISTMENT INTENTIONS:</u> | | | | | |
| YES OR PROBABLY YES | 58 | 64 | 81 | 82 | 60 |
| NO OR PROBABLY NO | 33 | 32 | 6 | 18 | 8 |
| WILL RETIRE | 8 | 3 | 13 | 0 | 32 |

NOTE: Columns may not add to 100 percent due to rounding or nonresponse

IMPLICATIONS

This survey was initiated to provide current job and task data for use in evaluating the AFMAN 36-2108 *Specialty Description* and appropriate training documents.

Overall, survey data for the Cardiopulmonary Laboratory career ladder reflects a well functioning career ladder. Personnel progress typically through the career ladder, with 3- and 5-skill level members performing technical tasks, 7-skill level members performing a mixture of technical and supervisory functions, and 9-/CEM skill level members performing career ladder management tasks. Survey data show the AFMAN 36-2108 Specialty Description accurately reflects the jobs and tasks currently being performed in the career ladder.

Survey results described in the **SPECIALTY JOB** section clearly suggest that the Cardiopulmonary Laboratory career ladder has seen only minor changes in career structure since the previous survey in 1990. The basic premise of performing respiratory therapy, cardiopulmonary, and cardiovascular activities has remained constant. Personnel in the Noninvasive Cardiology Job make up the bulk of the career ladder and perform a job broader in scope than any other job identified in the career ladder. STS 4H0XI is well supported by occupational survey data.

Members of the Cardiopulmonary Laboratory specialty appear to be extremely satisfied with their jobs, with job satisfaction indicators generally higher than those in the 1990 survey. The most notable exception is the somewhat lower positive responses concerning reenlistment intentions by the current survey in the 49-96 months TAFMS group compared to those in 1990.

APPENDIX A

**SELECTED REPRESENTATIVE TASKS PERFORMED BY
SPECIALTY JOB GROUPS**

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TABLE I
RESPIRATORY THERAPY JOB
(ST016)

GROUP SIZE: 118
PERCENT OF SAMPLE: 38%
PREDOMINANT GRADE: E-4/3
AVERAGE NUMBER OF TASKS PERFORMED: 82

AVERAGE TICF: 47 MOS
AVERAGE TAFMS: 79 MOS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING:

| REPRESENTATIVE TASKS | | PERCENT MEMBERS PERFORMING |
|----------------------|--|----------------------------------|
| E178 | Perform routine ventilator checks | 100 |
| E194 | Set up nebulizers | 99 |
| E195 | Set up oxygen delivery devices | 99 |
| E155 | Adjust ventilator settings | 99 |
| E179 | Perform suctioning procedures | 99 |
| E198 | Set up respiratory therapy alarms | 99 |
| A24 | Perform arterial punctures | 99 |
| A1 | Administer medications | 98 |
| E185 | Record patient respiratory therapy results | 98 |
| E199 | Set up volume ventilators | 98 |
| E164 | Connect flow meters | 97 |
| E154 | Adjust respiratory therapy alarms | 97 |
| E190 | Set up humidifiers | 97 |
| E196 | Set up positive end expiratory pressure (PEEP) devices | 96 |
| E161 | Assist physician in weaning patients from ventilators | 96 |
| E197 | Set up pressure ventilators | 96 |
| E167 | Instruct patients in use of handheld or updraft nebulizers | 95 |
| E170 | Monitor bronchodilator therapies | 95 |
| E186 | Record progress of respiratory therapy treatment | 94 |
| E188 | Set up continuous positive airway pressure (CPAP) devices | 93 |
| E159 | Assist physician in performing extubation procedures | 92 |
| A39 | Prepare medications | 91 |
| E168 | Instruct patients in use of incentive spirometers | 89 |
| A26 | Perform blood-gas analyses | 87 |
| A37 | Practice infection control procedures | 83 |

TABLE II
NONINVASIVE CARDIOLOGY JOB
(ST013)

GROUP SIZE: 121
PERCENT OF SAMPLE: 39%
PREDOMINANT GRADE: E-4/5
AVERAGE NUMBER OF TASKS PERFORMED: 107

AVERAGE TICF: 59 MOS
AVERAGE TAFMS: 87 MOS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING:

| TASKS | PERCENT MEMBERS PERFORMING |
|---|----------------------------------|
| C98 Perform ECG tests | 100 |
| C102 Perform Holter-monitoring tests | 100 |
| C113 Prepare patients for Holter-monitoring tests | 100 |
| A8 Assist physician in performing treadmill tests | 99 |
| A41 Prepare patients for treadmill tests | 99 |
| C118 Set up exercise stress test equipment and materials | 99 |
| A45 Set up exercise stress test equipment and materials | 99 |
| C101 Perform exercise stress tests | 98 |
| C112 Prepare patients for exercise stress tests | 98 |
| C119 Set up Holter-monitoring equipment | 98 |
| A21 Monitor electrocardiographic (ECG) tests | 95 |
| C114 Scan Holter-monitoring tapes for abnormalities | 94 |
| C80 Assess and report ECG test results to physician | 93 |
| C83 Assess and report Holter-monitoring test results to physician | 93 |
| A43 Record treadmill test results | 92 |
| A19 Interpret arrhythmias | 91 |
| A37 Practice infection control procedures | 88 |
| A16 Compile physiological data for computer input, such as height, weight, and age | 88 |
| A18 Inspect cardiopulmonary equipment | 88 |
| A31 Perform universal precaution procedures | 84 |
| A50 Take and record vital signs | 82 |
| D143 Perform routine spirometry tests | 77 |
| D135 Perform flow/volume loop tests | 75 |
| A14 Clean patient treatment or examination rooms | 74 |
| A4 Assess treadmill test results | 72 |
| F203 Complete treadmill report forms | 68 |

TABLE III
PULMONARY DIAGNOSIS JOB
(ST012)

GROUP SIZE: 16
PERCENT OF SAMPLE: 5%
PREDOMINANT GRADE: E-4/5
AVERAGE NUMBER OF TASKS PERFORMED: 79

AVERAGE TICF: 79 MOS
AVERAGE TAFMS: 106 MOS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING:

| TASKS | | PERCENT MEMBERS PERFORMING |
|-------|--|----------------------------------|
| D143 | Perform routine spirometry tests | 100 |
| D135 | Perform flow/volume loop tests | 100 |
| D142 | Perform postbronchodialator tests | 100 |
| D138 | Perform lung diffusion tests | 100 |
| A24 | Perform arterial punctures | 100 |
| A37 | Practice infection control procedures | 94 |
| A31 | Perform universal precaution procedures | 94 |
| D130 | Perform body plethresmorgraph tests | 94 |
| A16 | Compile physiological data for computer input, such as height, weight, and age | 94 |
| D152 | Set up lung diffusion equipment | 94 |
| A26 | Perform blood-gas analyses | 94 |
| D137 | Perform home oxygen evaluations | 94 |
| A13 | Clean and disinfect nondisposable cardiopulmonary equipment or components | 94 |
| A30 | Perform pulse oximeter tests | 93 |
| D148 | Perform user maintenance on pulmonary function systems | 88 |
| A23 | Obtain patient histories | 88 |
| F206 | Initiate or annotate pulmonary request forms | 88 |
| D146 | Perform user maintenance on body plethresmorgraphs | 88 |
| D151 | Set up bronchoscopy equipment | 82 |
| D123 | Assist physician in performing bronchoscopies | 81 |
| D147 | Perform user maintenance on fiber-optic bronchoscopes | 81 |
| D149 | Prepare biopsies for laboratory | 81 |
| A18 | Inspect cardiopulmonary equipment | 81 |
| F210 | Maintain general correspondence, files, records, or laboratory reports | 75 |
| A44 | Set up spirometers | 75 |

TABLE IV
INVASIVE CARDIOLOGY JOB
(ST017)

GROUP SIZE: 17
PERCENT OF SAMPLE: 6%
PREDOMINANT GRADE: E-5
AVERAGE NUMBER OF TASKS PERFORMED: 77

AVERAGE TICF: 87 MOS
AVERAGE TAFMS: 120 MOS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING:

| TASKS | | PERCENT MEMBERS PERFORMING |
|-------|--|----------------------------------|
| B76 | Set up cardiac catheterization trays | 100 |
| B78 | Set up sterile fields | 100 |
| B72 | Prepare site for catheter insertions | 100 |
| A17 | Dispose of contaminated materials | 100 |
| A22 | Monitor patients while transporting within hospital | 100 |
| A31 | Perform universal precaution procedures | 94 |
| A37 | Practice infection control procedures | 94 |
| A16 | Compile physiological data for computer input, such as height, weight, and age | 94 |
| A19 | Interpret arrhythmias | 94 |
| A47 | Set up x-ray equipment | 94 |
| B77 | Set up injectors | 94 |
| B66 | Connect transducers to equipment | 94 |
| B55 | Assist physician in performing balloon pump insertions | 94 |
| B52 | Assist physician in performing angiographs | 88 |
| B57 | Assist physician in performing coronary arteriographs | 88 |
| B71 | Prepare injector solutions | 88 |
| A14 | Clean patient treatment or examination rooms | 88 |
| A18 | Inspect cardiopulmonary equipment | 88 |
| B70 | Perform user maintenance on cineangiographic equipment | 88 |
| A33 | Perform user maintenance on cardiac monitors | 88 |
| B68 | Monitor balloon pumps | 88 |
| B73 | Process cineangiographic films | 82 |
| B53 | Assist physician in performing angioplasties | 82 |
| A21 | Monitor electrocardiographic (ECG) tests | 82 |
| B69 | Perform quality control procedures for cineangiographic equipment | 82 |

TABLE V
CARDIOPULMONARY LAB MGT JOB
(ST015)

GROUP SIZE: 25
PERCENT OF SAMPLE: 8%
PREDOMINANT GRADE: E-6/7
AVERAGE NUMBER OF TASKS PERFORMED: 97

AVERAGE TICF: 121 MOS
AVERAGE TAFMS: 200 MOS

THE FOLLOWING TASKS ARE IN DESCENDING ORDER OF PERCENT MEMBERS PERFORMING:

| TASKS | | PERCENT MEMBERS PERFORMING |
|-------|---|----------------------------------|
| H258 | Counsel subordinates concerning personal matters | 100 |
| H307 | Supervise military personnel | 96 |
| H310 | Write performance reports or supervisory appraisals | 96 |
| H293 | Interpret policies, directives, or procedures for subordinates | 96 |
| H268 | Direct administrative functions | 92 |
| H295 | Participate in general meetings, such as staff meetings, briefings, conferences or workshops, other than conducting | 92 |
| H252 | Conduct general meetings, such a staff meetings, briefings, conferences, or workshops | 92 |
| H249 | Assign personnel to work areas or duty positions | 92 |
| H261 | Determine or establish work assignments or priorities | 92 |
| H283 | Evaluate personnel for compliance with performance standards | 92 |
| H311 | Write recommendations for awards or decorations | 92 |
| H257 | Conduct supervisory performance feedback sessions | 88 |
| H264 | Develop or establish work schedules | 88 |
| H254 | Conduct self-inspections or self-assessments | 88 |
| H273 | Establish organizational policies, such as operating instructions (OIs) or standard operating procedures (SOPs) | 88 |
| H290 | Initiate actions required due to substandard performance of personnel | 88 |
| H256 | Conduct supervisory orientations for newly assigned personnel | 88 |
| H287 | Evaluate work schedules | 84 |
| H253 | Conduct safety inspections or equipment or facilities | 84 |
| H259 | Determine or establish logistics requirements, such as personnel, equipment, tools, parts, supplies, or workspace | 80 |
| H274 | Establish performance standards for subordinates | 80 |
| H300 | Plan or schedule work assignments or priorities | 80 |
| H304 | Schedule personnel for temporary duty (TDY) assignments, leaves, or passes | 80 |
| F210 | Maintain general correspondence, files, records, or laboratory reports | 76 |
| G228 | Determine training requirements | 76 |